choose clean water

The Honorable Lisa P. Jackson
Administrator
U. S. Environmental Protection Agency
Water Docket, Mailcode: 28221T
1200 Pennsylvania Ave., NW
Washington, DC 20460

Re: Chesapeake Bay TMDL -- Docket no. EPA-R03-OW-2010-0736

Dear Administrator Jackson:

On behalf of the members of the Choose Clean Water Coalition (Coalition) listed below, we would like to thank you for the opportunity to comment on the Draft Chesapeake Bay Total Maximum Daily Load (TMDL). The Coalition brings together more than 130 organizations from Pennsylvania, New York, Maryland, Delaware, Virginia, West Virginia and the District of Columbia, working together to help everyone in the region choose clean water.

The Chesapeake Bay is an iconic national treasure and an over $1 trillion resource.[1] Right now is our best opportunity in a generation to restore the Bay and all the waters that feed it. While we have made progress on a number of fronts, we simply have not done enough thus far to stem pollution to our waterways. Now, as the U.S. Environmental Protection Agency (EPA) and the Bay states collaborate, we formally express our strong support to finalize and implement the Bay-wide TMDL.

We have a moral and legal imperative to protect these local waters upon which 17 million people rely. The Clean Water Act, three major Bay Agreements and scores of minor ones, three consent decrees, dozens of Memoranda of Agreement/Understanding (MOA/MOU) and a Presidential Executive Order all require development of a Bay-wide TMDL. It is not only legally required, but perfectly logical, appropriate and fair for EPA to develop this TMDL. Moreover, EPA has used this authority wisely, engaging in a highly transparent public process developing the TMDL (and seeking comments on the draft), providing states ample opportunity to prepare and revise draft Watershed Implementation Plans, (WIPs), and seeking to implement allocations that are substantially equivalent to those the states have had since 2003.

We respectfully submit these comments in support of the TMDL.

I. Background on Restoration of the Chesapeake Bay

The decline of this ecological national treasure stems from human activity that has altered the landscape throughout the Bay's 64,000 square mile watershed comprised of parts of Maryland, Virginia, Pennsylvania, Delaware, New York, West Virginia and all of the District of

[1] 2004 Chesapeake Bay Watershed Blue Ribbon Finance Panel Report, "Saving a National Treasure: Financing the Cleanup of the Chesapeake Bay"."

Columbia ("Bay states"). The population in the watershed has doubled since 1950 (now around 17 million), and much of this growth and development – leveling trees, forests and wetlands and replacing farms with subdivisions and malls — has taken place close to the Bay or to its sensitive tributaries, harming natural filters that are critical to a healthy ecosystem.

The Chesapeake has historically been America's great protein factory – once producing 25 million bushels of oysters annually and, until recently, 50% of the nation's blue crabs. The Bay is the spawning and nursery grounds for up to 90% of the Atlantic stocks of striped bass. But, the most recent harvest of oysters was down to 200,000 bushels – far below historic levels – – and only about a third of the nation's blue crabs now come from the Chesapeake. These populations are down because of overharvest, poor water quality and loss of critical habitat.

The most critical measure of the Bay's health is water quality. A healthy and productive Bay must be safe for people and support abundant aquatic life, such as oysters, fish and crabs. The water should be clear enough for underwater grasses a critical habitat for these species to thrive. The Bay's primary water quality problem is caused by excessive amounts of nutrients, specifically nitrogen and phosphorus, and sediment that flow from tributaries and lead to murky water and algae blooms. Excess algae cloud the water and block sunlight from reaching the Bay grasses on the bottom. Decaying algae create low oxygen levels for aquatic life throughout the Bay. The latest indicators of Bay health from EPA in 2009, showed the Bay to be meeting only 24% of its water quality goals.[2]

The predominant sources of the nitrogen, phosphorus, and sediment loads are well known. For nitrogen, the principal sources are agriculture, wastewater treatment plants, polluted stormwater from developed areas and air deposition. Phosphorus is mainly the result of agriculture, wastewater and stormwater from development. Sediment comes mostly from agriculture, stormwater from development, or from stream beds and banks eroding due to increased flows caused by runoff from impervious land covers.

Origins of Chesapeake Bay Management and Restoration – The Science-Based Voluntary Approach

In 1972, Tropical Storm Agnes exacerbated the decline of the Bay, which led U.S. Senator Charles "Mac" Mathias (R-Md) to set out on a lengthy tour of the Bay in the summer of 1973. This, and subsequent trips, led him to introduce legislation directing the EPA to embark on a major research project to determine the Bay's problems and make recommendations on how to solve them.

In 1976 Congress directed EPA to undertake a comprehensive study of the Bay focused on its water quality and living resources. Six years and $27 million later, the EPA finished the comprehensive study and, in September 1983, released a lengthy report, *Chesapeake Bay: A Framework for Action.* The report identified nutrient pollution as the greatest threat to the Bay, and recognized that the problem could not be solved without addressing the entire watershed –

[2] Bay Barometer: A Health and Restoration Assessment of the Chesapeake Bay and Watershed in 2009, EPA 2010

not just the tidal Bay states of Maryland and Virginia. The report also provided an innovative blueprint for the intergovernmental, inter-jurisdictional "Chesapeake Bay Program" that was formed in December when the *Chesapeake Bay Agreement of 1983* was signed by a group that would be known as the Chesapeake Executive Council – the governors of Maryland, Pennsylvania and Virginia, the Mayor of the District of Columbia, and the Administrator of the EPA. The organized and institutional voluntary effort to restore the Bay had begun.

In February, 1987 Congress overrode President Reagan's veto, and passed the reauthorization of the Clean Water Act[3] (CWA), which included a new section entitled "Chesapeake Bay". This provision, known as Section 117, basically codified the Chesapeake Bay Program and authorized Congress to continue funding the restoration effort at $13 million annually.[4]

In December 1987, the Chesapeake Executive Council, now expanded to include the chair of the Chesapeake Bay Commission, signed the *1987 Chesapeake Bay Agreement*, which for the first time included specific quantitative goals and commitments. The centerpiece of the *Agreement* was a goal to reduce nutrient pollution to the Bay by 40% by 2000. The *1992 Amendments to the Chesapeake Bay Agreement* was signed by the Council and "capped" the 40% reduction goal after 2000. In addition, the 1992 *Amendments* recognized the need to reduce nutrients in the tributaries, and called for the states to develop "tributary-specific strategies" on how to meet the nutrient reduction goal. The states all drafted tributary strategies in the late 1990's which were not required to be reviewed or approved by anyone outside of each state's government. The *Amendments* also recognized the need for "intensified efforts to control nonpoint sources of pollution, including agriculture and developed areas…", as well as the need to engage Delaware, New York and West Virginia in the efforts to reduce nutrients in the tributaries.

Voluntary to Regulatory Shift Begins

In 1998, a lawsuit filed by the American Canoe and American Littoral Society against EPA, discussed in more detail below, alleged Virginia was not timely and complete in listing its Clean Water Act Section 303(d) impaired waters and preparing TMDLs for those waters, and that EPA failed in its non-discretionary duty under the Clean Water Act to take over when the state had failed to do so.

Virginia submitted an incomplete list of impaired waters in 1996. That list, which included Virginia's portion of the Chesapeake Bay, was partially approved by EPA in 1998. The lawsuit was settled with a consent agreement in the Federal Eastern District of Virginia court on June 11, 1999. Under the terms of the court agreement, EPA would ensure that Virginia completed its listing of impaired waters and developed TMDLs for all waters on the 1998 list by May 1, 2010. If Virginia did not do so, EPA would complete them no later than May 1, 2011. If

[3] Water Quality Act of 1987

[4] In 2000, Congress passed a reauthorization of Section 117 of the Clean Water Act, which did not substantially alter the approach or make up of the Chesapeake Bay Program, but did increase the authorization level to $40 million annually.

waters met water quality standards any time up to May 1, 2011, they would be removed from the list and there would be no need for TMDLs for those waters.

The *Chesapeake 2000* Agreement and Setting of 2010 Cleanup Goals

In 1998, the Chesapeake Executive Council adopted Directive 98-2, which directed the Bay Program to develop a new Chesapeake Bay agreement for 2000, and to present a draft set of options and recommendations to the Council in 1999.

At the 1999 annual meeting of the Chesapeake Executive Council, a new draft agreement was released for public review. The language in that draft, which was retained in the final agreement a year later, made the intent to meld the voluntary and regulatory approaches clear. In attempts to avoid the imposition of a TMDL regulatory approach, the Virginia delegation encouraged the following language that was adopted:

> Recent actions taken under the Clean Water Act resulted in listing portions of the Chesapeake Bay and its tidal rivers as 'impaired waters.' These actions have emphasized the regulatory framework of the Act along with the ongoing cooperative efforts of the Chesapeake Bay Program as the means to address the nutrient enrichment problems within the Bay and its rivers. In response, we have developed, and are implementing, a process for integrating the cooperative and statutory programs of the Chesapeake Bay and its tributaries. We have agreed to the goal of improving water quality in the Bay and its tributaries so that these waters may be removed from the impaired waters list prior to the time when regulatory mechanisms under Section 303(d) of the Clean Water Act would be applied.

The Chesapeake Executive Council signed the *Chesapeake 2000* agreement on June 28, 2000. Although the 40% nutrient reduction goal from 1987 was still not met, the Chesapeake Bay Program adopted new stronger goals, and set up a clear path of regulatory and voluntary actions designed to ensure that the 2010 clean up goals would be met. In 2000, both Delaware and New York signed an MOU with the other Chesapeake Bay Program partners and agreed to adopt the Water Quality goals of the *Chesapeake 2000* agreement – West Virginia followed suit in 2002.

In accordance with the commitments in *Chesapeake 2000,* EPA and its Bay Program partners used their best scientific understanding of the Chesapeake Bay ecosystem, including an extensive body of research and monitoring, to develop the water quality criteria. The criteria were published in *Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll-a for the Chesapeake Bay and Its Tidal Tributaries* in April 2003. The criteria recognized that not every cubic foot of water in the Bay required the same level of protection – some, such as upstream spawning and nursery areas or "habitat zones" needed high levels of protection, especially during spawning and nursery seasons, other areas, such as the Bay's deep trench, where few living resources ever resided, needed less. EPA also developed water clarity criteria in order to protect and restore critical underwater Bay grasses. These criteria were then coupled with site-specific Bay grass acreage, which were incorporated in the new water quality standards that were being developed.

EPA and its Bay Program partners also agreed to control excess algae by developing both narrative and numerical criteria for chlorophyll-*a*. The numerical criteria were necessary in state standards for areas where achievement of dissolved oxygen criteria would not solve algal water quality impairments. The new EPA criteria and "habitat zoning" required revising aquatic use designations. EPA, working with all of its state partners including the District of Columbia and the headwaters states, published its *Technical Support Document for Identification of Chesapeake Bay Designated Uses and Attainability* in August 2003. The *Technical Support Document* showed how changes in the aquatic use zones for dissolved oxygen were justified, and that the old standards, because of both natural and manmade reasons, were unattainable. The document provided extensive guidance on how states should determine the geographical extent of the aquatic habitat use zones and associated water quality criteria in revising their water quality standards. It also provided support for the states to conduct their use attainability analyses, following specific decision criteria in the federal water quality standards regulations.[5]

To assess the potential attainability of the new designated uses and criteria, EPA and its state partners organized the technological and cost information into hypothetical tiers of nutrient and sediment controls, which were modeled to estimate dissolved oxygen criteria attainment in the newly-designated habitat zones. Stakeholder experts representing the wastewater treatment, agriculture, and urban stormwater sectors were involved in the work groups which established the tiers and assessed the results. "Screening-level" economic analyses assessed whether there were any areas where achieving the new standards might cause "substantial and widespread economic and social impact," exceeding the decision criteria in the federal regulations[6].

The Bay states with tidal waters (Delaware, District of Columbia, Virginia and Maryland) completed the process of revising their Chesapeake Bay tidal water quality standards in 2004-2005. The EPA analyses noted above, along with state-specific information, allowed the states to show in their water quality standards adoption processes that the revised water quality criteria and use designations would satisfy the federal water quality standards regulations by protecting "existing" tidal aquatic life uses, would be attainable, and would not lead to "substantial and widespread economic or social impact[s]." [See, for example, Maryland's Use Attainability Analyses supporting adoption and refinement of its water quality standards for various tidal waters.]

As each state completed its adoption process, EPA approved the revised state water quality standards, and the states updated their section 303(d) listings for Chesapeake Bay and tidal tributary waters according to the new standards. Since 2003 EPA has published several amendments to the criteria and supporting procedures, in partnership with the states. As EPA has outlined in its draft TMDL report, states have completed or proposed minor modifications of the state standards, including further measures to address use attainability issues in specific geographic areas. After the EPA water quality criteria guidance report was completed in April 2003, EPA used its Chesapeake Bay models and multi-state allocations workgroup to develop nutrient and sediment load allocations for all river basins and states in the Bay watershed. These allocations were to guide subsequent revision or development of state tributary strategies. On April 25, 2003, Virginia's Secretary of Natural Resources Tayloe Murphy, who was also chair of

[5] 40 CFR § 131.10(g)).
[6] 40 CFR § 131.10(g)6.

the Chesapeake Bay Program's Principals' Staff Committee,[7] sent a memorandum to all of the Bay Program partners, including the Bay states. The Memorandum, *Summary of Decisions Regarding Nutrient and Sediment Load Allocations and New Submerged Aquatic Vegetation (SAV) Restoration Goals*, clearly laid out the allocations which were to guide the development of state specific tributary strategies by 2004. *See* Chesapeake Executive Council Directive 03-02. These allocations were "TMDL-like", and are very similar to EPA's proposed TMDL nutrient allocations released earlier this year and again as part of this draft TMDL.[8]

All of the Bay states developed updated tributary-specific strategies, most final in 2004. These tributary strategies used the allocations that were contained in the Tayloe Murphy *Summary of Decisions* Memorandum. For the past seven years all of the Bay states have known what their load reduction allocations would be, and have developed strategies to meet them.

As part of this overall process, EPA, the U.S. Geological Survey, all of the Bay states and two river basin commissions signed a MOU, on *Cooperative Efforts for Monitoring and Assessing Water Quality in the Streams and Rivers of the Chesapeake Bay Watershed* in September 2004. This MOU was crafted to improve the reliability of water quality monitoring throughout the Bay watershed, and outlined a common monitoring strategy and expanded network.

Technical work on the TMDL actually began in 2005 with the convening of the Chesapeake Bay Reevaluation Steering Committee (now known as the Water Quality Goal Implementation Team) whose initial focus was on updating and revising the watershed and water quality models. And since 2005, there have been regular meetings of this committee, all public, all open to stakeholder participation, and whose actions, discussions, and decisions have been fully documented on the Chesapeake Bay Program's web page. [9]

The Regulatory Approach Becomes Formal – The Chesapeake Bay TMDL

At the 2007 Chesapeake Executive Council meeting, Maryland's Governor Martin O'Malley, chair of the Chesapeake Executive Council, formally announced that the Chesapeake Bay Program would not meet its water quality goals by 2010 when he stated:

> We are at a key crossroads in our Bay restoration efforts. With the alignment of political leadership, public will, and good science, we have the moral imperative to turn back the decline in the Bay's health that has been decades in the making. We have made significant progress in many areas over the last 25 years; however, we must also acknowledge that based on the current pace we will not meet our 2010 nutrient and sediment reduction goals. But today we have pledged to accelerate our efforts and to have any and all programs and policies in place by the end of calendar year 2010 to meet

[7] Representatives from all six Bay watershed states, DC, EPA and the Chesapeake Bay Commission http://www.chesapeakebay.net/committee_psc_info.aspx?menuitem=46326.

[8] Using the Phase 5.3 Watershed Model, implementation of the Tributary Strategies is expected to result in annual loads of 189.7 million pounds of total nitrogen, 14.25 million pounds of total phosphorus and 6.4 billion pounds of sediment compared to the draft TMDL caps of 187.4 million pounds, 12.5 million pounds and 6.3 billion pounds, respectively.

[9] http://www.chesapeakebay.net/wq_git_info.aspx?menuitem=47174

our nutrient and sediment reduction goals. We also pledge our best efforts to continue to seek any necessary additional funding consistent with overall fiscal and economic conditions.

Removing the Bay from the Section 303(d) list would have avoided the need for development of a TMDL for the Bay. The failure to meet that deadline triggered the court ordered obligations found in the *American Canoe* and *Kingman Park* consent decrees and the MOU with Maryland to develop a Bay TMDL discussed in further detail below.

This failure to meet the 2010 restoration goals was acknowledged again in 2008 at the annual Council meeting, when EPA revealed that the current restoration pace would not meet the nitrogen goals until 2034 and the phosphorus goals until 2050. In June 2008, the Principals' Staff Committee of the Chesapeake Bay Program formally requested that EPA accelerate the Bay TMDL so it takes effect no later than December 31, 2010 – not May 1, 2011.[10] EPA agreed to the request from its partners and pledged to finalize the Bay TMDL by the end of 2010.

The Federal Commitment to Restoration of the Chesapeake Bay

Congress and the Administration have increased commitments of financial and agency support for restoration and protection of the Chesapeake Bay watershed since the 1980s. There has been a considerable amount of federal support to states, local governments, farmers and others to implement on-the-ground practices that will be needed to succeed. This funding support has been increasing over the years as the TMDL has gotten closer.

EPA has also provided implementation funds, $100,000 annually beginning in Fiscal Year 2002, to the three Headwater states of Delaware, New York and West Virginia after they signed the Water Quality MOU. That has incrementally increased to $500,000 this year. In Fiscal Year 2005 EPA began a new annual grants program for implementation activities in the Chesapeake Bay watershed, primarily targeting nutrient and sediment reduction. The program was funded at $7.8 million the first year and the amount has fluctuated in the years since. EPA has also been providing additional funds to all of the states to hire or retain staff in regulatory programs in order to help develop and implement the TMDL and the state WIPs. New Chesapeake Bay watershed-specific grant programs have been developed over the past decade by the National Oceanic and Atmospheric Administration and USDA's Natural Resources Conservation Service (NRCS). In the 2008 Farm Bill, Congress allocated $188 million over six years in mandatory spending for agricultural conservation practices on farms in the Chesapeake Bay watershed portion of the six states. This is a critical source of substantial funding for farmers to implement practices to support efforts to meet the requirements of the TMDL and their state WIPs.

In May 2009, President Obama issued Executive Order 13508 "Chesapeake Bay Protection and Restoration," which aligned the Federal government with efforts necessary to restore the Bay's water quality and other restoration and protection goals. This historic effort will ensure unprecedented Federal support for efforts to restore the Bay and to meet the TMDL. In September 2009, USDA Secretary Vilsack announced that there would be $638 million over

[10] PSC Meeting minutes June 18-19, 2008

five years from various USDA programs devoted to Chesapeake Bay restoration activities – though this is not all directly for water quality. EPA's Chesapeake Bay Program budget increased from $31 million in FY 2009 to $50 million in FY 2010, and the President proposed $63 million for FY 2011 – all unprecedented amounts. EPA's Clean Water State Revolving Fund (SRF), a national program with a set formula for dissemination of money to the states, went from $689 million in FY 2009 to $2.1 billion in FY 2010 and the President's FY 2011 budget request is $2.0 billion.

As part of the President's Executive Order, on September 30, 2010 the Obama Administration recently announced that it is providing a substantial amount of funding support from more than a dozen Federal agencies – proposing over $490 million in funding support for Chesapeake Bay in Fiscal Year 2011, which has just begun. Some funding highlights from this effort to target water quality specifically in the Chesapeake Bay watershed include EPA programs, such as the Clean Water SRF ($169.51 million); Section 319 non-point source grants to the states ($10.37 million); $5.89 million in Section 106 Water Pollution Control grants to the Bay states; and $4.7 million to support state tidal monitoring programs. NRCS is targeting $72 million in financial and technical assistance to help farmers in high-priority watersheds. In addition, through the newly established Chesapeake Bay Regulatory and Accountability Program and State Implementation Grants, EPA will provide more than $20 million directly to the Bay states to help them develop and implement the Chesapeake Bay TMDL and the state WIPs.

Conclusion

The EPA, along with the Bay states, has worked for decades in a cooperative manner through a transparent and public process to reduce pollution leading to the Chesapeake Bay. Unfortunately, water quality goals set in the 1980s and in 2000 have not been met, triggering the development of the TMDL. In addition there is a clear and lengthy record of EPA, and the Bay states, going to considerable lengths to ensure that both technical and economic attainability were addressed during this process. The new Chesapeake Bay tidal water quality standards are both scientifically valid and protective under the Clean Water Act, and at the same time, are economically and technically attainable. It is important to note that since the 1999 court agreement with EPA over the listing of Virginia's Bay waters as impaired, there has been ongoing progress by EPA and the federal government to follow that agreement, the *Chesapeake 2000* agreement and ultimately the development of the Chesapeake Bay TMDL. This progress, though sometimes delayed by technical issues, continued unabated through the administrations of Presidents Bill Clinton, George W. Bush, and Barack Obama.

II. EPA is Legally Obligated to Develop a Bay Wide TMDL

While the history of the Chesapeake Bay restoration effort illustrates decades of work to address water quality issues, the legal history demonstrates EPA's obligation to develop the TMDL in the absence of the Bay states' ability to meet water quality goals. EPA has accurately set forth the statutory and regulatory basis for its proposed TMDL in Section 1.4 of the draft TMDL entitled "Legal Framework for the Chesapeake Bay TMDL" as well as relevant consent decrees issued by federal courts in Virginia, the District of Columbia and Delaware, an MOU with respect to the TMDL for Maryland's portion of the Chesapeake Bay and its tidal tributaries

and a Settlement Agreement resolving litigation with the Chesapeake Bay Foundation seeking issuance of a Bay-wide TMDL. The Clean Water Act, three major Bay Agreements and scores of minor ones, three consent decrees, dozens of Memoranda of Agreement/Understanding and a Presidential Executive Order all require development of a Bay-wide TMDL.

Section 303(d) of the Clean Water Act

EPA's statutory authority to develop the Bay-wide TMDL is derived from Section 303(d) of the Clean Water Act.

> The CWA required each state, ..., to submit by June 28, 1979 (no more than 180 days after the EPA identified certain pollutants, pursuant to § 1314(a)(2)(D)) the first of its TMDL calculations to the Administrator of the EPA. Within thirty days after this submission, the Administrator must take one of two actions. She may approve the TMDL, in which case it becomes binding on the states. If, however, she disapproves it, the Administrator must devise her own binding TMDL for the state within thirty days of disapproval. CWA § 303(d)(2), 33 U.S.C. § 1313(d)(2).

Kingman Park Civic Ass'n v EPA, 84 F.Supp. 2d 1, 2 (D.D.C. 1999).

Thus, Section 303(d) of the Clean Water Act requires states, in the first instance, to identify impaired waters and develop "TMDLs." 40 C.F.R. § 130.7(d). If a state clearly indicates through inaction or otherwise that it will not be able to develop the TMDL, then the duty to prepare the TMDL shifts to EPA. *See, e.g., Scott v. Hammond*, 741 F. 2d 992 (7th, Cir. 1984) (holding that lengthy inaction on the part of a state can constitute a "constructive submittal" of an inadequate TMDL, thereby transferring the duty to prepare to EPA); *Kingman Park*, 84 F.Supp. 2d 1, 2; *American Canoe Ass'n, Inc. v. United States Envtl. Protection Agency*, 30 F. Supp. 2d 908, 919--22 (E.D. Va. 1998) ("*American Canoe I*") (holding that EPA must take action to develop TMDLs for states that fail to do so); *Alaska Ctr. for the Env't v. Reilly*, 762 F. Supp. 1422, 1426--29 (W.D. Wa. 1991) ("Congress intended that EPA's affirmative duties be triggered upon a state's failure to submit a list or any TMDL at all."); *cf Miccosukee Tribe of Indians v. United States Envtl. Protection Agency*, 105 F.3d 599, 602--03 (11th Cir. 1997) (holding that, despite the lack of an actual submission from Florida indicating that it had changed the water-quality standards, EPA's nondiscretionary duty under 33 U.S.C. § 1313(d)(4)(B) would be triggered if Florida had actually altered its water-quality standards).

The line of decisions stemming from *Scott v. Hammond*, 741 F. 2d 992 (7th Cir. 1984), clearly established that the duty to develop TMDLs for impaired waters transfers to EPA through the mechanism of a "constructive submittal" when a state fails to timely submit a TMDL. *See, e.g. Kingman Park*, 84 F.Supp. 2d 1-2; *American Canoe I*, 30 F. Supp. 2d at 919-22; *Alaska Ctr. for the Env't*, 762 F. Supp. at 1426-29. Otherwise, a state could ignore its duty to prepare restoration plans for impaired waters forever, so long as it did not actively submit inadequate plans to EPA for review and approval, clearly not what Congress intended in enacting the Clean Water Act. As the court in *Kingman Park* recognized, Congress could not have meant for EPA

to sit idly by for more than a decade while states failed to carry out their statutory mandates. *Kingman Park,* 84 F.Supp. 2d at 7.

Here, not only have none of the Bay states developed TMDLs for either their portions of the Bay (Maryland and Virginia) or their tributaries to the Bay, but they have affirmatively asserted that they were not able to develop the TMDL on their own, and invited EPA to assume the lead and take over developing the Bay TMDL.[11] Further, states agreed that a "state by state" approach to develop the TMDLs was scientifically and administratively less desirable than continuing to use a regional approach as they did with the water quality criteria. The well established doctrine of "constructive submission" of an inadequate TMDL by a state, which triggers EPA's duty to take over, coupled with the states' express request in this case that EPA take the lead in developing the Bay wide TMDL, provide ample authority for EPA's action in doing so.

In addition to the request of the states and EPA's legal obligation under the constructive submission doctrine, there is a compelling and logical reason for EPA to manage or coordinate the development of the Bay TMDL. The Bay watershed includes portions of six states, and all of the District of Columbia, and it would be impossible for one state to develop a TMDL to address more than a small part of the problem. No matter how firm Maryland and Virginia are with polluters or dischargers in their states, they could not fix the problems alone and could not order polluters or dischargers in upstream states, Pennsylvania or New York, for example, to cut back on their discharges.

Further, EPA often takes the lead role in developing TMDLs for interstate waters. *See Dioxin/Organochlorine Center v. Clarke*, 57 F.3d 1517 (9th Cir. 1995) (OR, WA and ID listed the Columbia River as impaired by a toxic compound, dioxin, but decided against developing TMDLs on their own. "Instead, after consultation and involvement in the development of the draft TMDL, the states requested the EPA to issue the proposed and final TMDL as a federal action under the authority of sec. 1313(d)(2)." The Columbia River TMDL for dioxin was upheld in the face of challenges filed by both environmentalists and industries. Rivers that form borders between states, such as the Savannah River, or that flow from one state to another, such as the Arkansas, or bays that receive pollutants from numerous states, such as the Chesapeake, are good candidates for EPA-developed TMDLs.

Prior TMDL Litigation and Agreements

As discussed above, Section 303(d) of the Clean Water Act requires states to identify water quality limited segments of water bodies within their borders and to establish the TMDL of pollutants that each water quality limited segment can assimilate, 33 U.S.C. § 1313(d)(1)(C)); this duty transfers to EPA, however, when the states fail to act. In 1997, EPA was sued because

[11] This decision was formalized at the meeting of the Principals' Staff Committee (PSC) on October 1, 2007. It was agreed that the Bay watershed TMDLs would be developed jointly between the six Bay watershed states, the District of Columbia and EPA, and then established by EPA. It was further agreed that the Water Quality Steering Committee would draft nutrient and sediment cap load allocations by tributary basin and jurisdiction, and the Principals' Staff Committee would formally adopt these allocations.

it did not act when Virginia failed to develop TMDLs for impaired water bodies. *American Canoe I*. That matter was settled via a consent decree approved by the federal court. *American Canoe v. EPA*, 54 F. Supp. 2d 621 (E.D. Va. 1999) ("*American Canoe II*").

EPA was also sued for failing to ensure that the District of Columbia identify impaired bodies of water within its jurisdiction and developed TMDLs for those waters. *Kingman Park Civic Association v EPA*, 84 F. Supp. 2d 1 (D. DC 1999). Like *American Canoe*, that matter was settled via consent decree which set deadlines for listing impaired water bodies and developing TMDLs for them. Those bodies of water are all tributaries to the Chesapeake Bay.

In addition, in 1996 the American Littoral Society and the Sierra Club sued EPA to ensure that TMDLs were developed for impaired waters on Delaware's Section 303(d) list which included a tidal Bay segment, the Upper Nanticoke River. *American Littoral Society, et al. v. EPA, et al.*, No. 96-330 (D. Del.).The parties entered a consent decree in 1997 which required EPA to develop TMDLs if Delaware failed to do so. While Delaware adopted some TMDLs, it does not have in place a TMDL to meet the current water quality standards for the tidal Bay segment, effectively leaving that task to EPA.

EPA was also sued for failing to require Pennsylvania to identify impaired bodies of water and establishing TMDLs for those waters. *American Littoral Society, et al. v. EPA*, No. 96-489 (E.D. Pa.). That matter was resolved via consent decree on April 9, 1997. Under the terms of the consent decree, EPA was to develop TMDLs for over 570 listed waters if Pennsylvania did not.

Another TMDL suit was filed against EPA in West Virginia. *Ohio Valley Environmental Coalition, Inc., et al. v. Carol Browner, et al.*, No. 2:95-0529 (S.D.W.VA.). Like the other matters, this case was resolved by consent decree in 1997. In that decree, EPA agreed to develop TMDLs for over 500 listed waters if West Virginia did not.

A similar claim was brought concerning Maryland's portion of the Bay. That claim was resolved via a MOU between Maryland and EPA in 1998. Like the *American Canoe* and *Kingman Park* consent decrees, this MOU required EPA to develop a TMDL for Maryland's portion of the Chesapeake Bay if Maryland failed to do so by 2010. Maryland did not develop such a TMDL.

Thus, EPA's Bay wide TMDL complies with its legal authority and commitment to prepare TMDLs for all of the Bay segments covered by these various consent decrees and MOUs. *See* Draft TMDL § 2.2.4.

Section 117(g) of the Clean Water Act

EPA's authority to issue the Bay wide TMDL is also supported by Section 117 of the Clean Water Act, which provides:

(g) Chesapeake Bay Program
(1) Management strategies

> The Administrator, in coordination with other members of the Chesapeake Executive Council, shall ensure that management plans are developed and implementation is begun by signatories to the Chesapeake Bay Agreement to achieve and maintain –
>
> (A) the nutrient goals of the Chesapeake Bay Agreement for the quantity of nitrogen and phosphorus entering the Chesapeake Bay and its watershed.
>
> (B) the water quality requirements necessary to restore living resources in the Chesapeake Bay ecosystem; …[12]

33 U.S.C. § 1267(g)(1)(A)-(g)(1)(B).[13] Use of the word "shall" makes the Administrator's obligation mandatory. *Lexecon Inc. v. Milberg Weiss Bershad Hynes & Lerach*, 523 U.S. 26, 35 (1998) ("The mandatory 'shall,' ... normally creates an obligation impervious to judicial discretion"). Thus, EPA was required to develop a management plan to comply with the nutrient reduction goals of the *Chesapeake 2000* agreement – 40% nutrient reduction and removal of the Bay from the Section 303(d) list. The proposed Chesapeake Bay TMDL is the most appropriate such '"plan" to "achieve and maintain …the nutrient goals…and water quality requirements" referred to in Section 117(g) because it is tailored to achieving compliance with the water quality standards for nutrients and sediment. It is the principal tool provided in the Clean Water Act for this purpose, and therefore is precisely what Congress intended that EPA should do in implementing Sections 303(d) and 117(g).

Fowler v. EPA Settlement Agreement - Requires TMDL by December 31, 2010

In addition to the statutory requirements that EPA develop a Bay-wide TMDL, EPA is also required to take this action pursuant to the consent decree in the Fowler case. In that case, EPA was sued for failing to comply with Section 117(g) and the Bay Agreements. *Fowler v. EPA*, Case No. 09-cv-00005-CKK, D. D.C., January 5, 2009. That matter was settled by agreement between the parties. The agreement provides that EPA will develop a Bay wide TMDL "[b]y December 31, 2010, pursuant to 33 U.S.C. §§ 1313(d) and 1267..." Settlement Agreement Section III.A.1. That agreement set forth a number of other deadlines for submission and completion of state watershed implementation plans. Thus, EPA is also required pursuant to the settlement agreement in *Fowler* to develop a Bay wide TMDL.

The May 12, 2009 Executive Order

On May 12, 2009, President Obama issued an Executive Order 13508[14] concerning restoration and protection of the Chesapeake Bay. The Order directed seven agencies of the federal government to develop recommendations for restoring the Chesapeake Bay. With oversight from the EPA Administrator, those agencies were to develop a final strategy for Bay

[12] There are three other goals identified by the CWA: toxics reduction; habitat restoration and wetlands protection, and; restoration for living resources, *e.g.*, oysters and grasses. The majority of these goals have not been met.
[13] This section was re-codified as part of the Estuaries and Clean Water Act of 2000, Title II Chesapeake Bay Restoration. One of the explicit purposes of the Restoration title was "to achieve the goals established in the Chesapeake Bay Agreement." Pub.L. 106-457, Title II, Sec. 202(b)(2), Nov. 7, 2000, 114 Stat. 1967.
[14] http://executiveorder.chesapeakebay.net/page/About-the-Executive-Order.aspx

restoration and protection. On May 12, 2010, such a strategy was issued. One of the goals of the strategy was for EPA to develop a Bay wide TMDL by December 2010 with full implementation by 2025.[15] The proposed TMDL, and its finalization by December 31, 2010, will implement this important goal of the Executive Order and restoration strategy.

EPA Has Properly Included "Backstop" Allocations in its TMDL

In its TMDL document EPA describes, thoroughly and accurately, the lengthy history leading to its development of the draft TMDL, including the legal framework (Sections 1 – 3), much of which has been summarized above. In Section 8, it describes the development by the states of their Watershed Implementation Plans, EPA's evaluation of them, and the use by EPA of "backstop" allocations which EPA developed, based on its exhaustive modeling and data-gathering efforts, to ensure that, where the WIPs fail to demonstrate eventual achievement of the loading caps, the "backstop" allocations will do so.

Over the course of more than two decades EPA has worked closely with the Bay states to develop effective strategies to restore the water quality of the Bay and to achieve compliance with water quality standards. The framework which allows each Bay state to develop a WIP, in which the state may establish allocations for sources within its boundaries which will achieve water quality standards for each segment before EPA applies backstop allocations (only if needed), is part of that joint effort. In its WIP each state must also provide assurance that it has and will use the authority and resources necessary to ensure that its allocations will be fully implemented so as to achieve eventual compliance with water quality standards.

As discussed above, EPA is legally required to establish the TMDLs on its own under Sections 303(d) and 117(g) of the Clean Water Act. However, allowing the states the "first shot" at prescribing effective loading allocations for sources within their jurisdictions lets them determine which combination of point and nonpoint source controls will provide, from their perspective, the most cost-effective or preferable approach to achieve water quality goals, provided each segment's overall loading cap is satisfied. As EPA stated in Section 8.3: "Backstop allocations were established to fill a loading shortfall in the jurisdiction's draft Phase 1 WIP or to increase the level of reasonable assurance that the overall TMDL pollutant cap will be achieved." To the extent that a WIP does not provide a combination of load and wasteload allocations to sources and categories of sources which is sufficient to satisfy the TMDL requirements which EPA provided to the states during the summer of 2010, based on its modeling results, for any segment within its jurisdiction, EPA's "backstop" allocations were applied so as to reasonably assure compliance, as EPA is required to do under Clean Water Act Sections 303(d) and 117(g). Given the serious deficiencies in most of the draft Phase 1 WIPs it was necessary for EPA to make substantial use of the backstops.

The result of this approach is that EPA is holding itself ultimately accountable for ensuring that the resulting allocations meet the requirements of Section 303(d) while allowing the states to propose allocations of their own through their WIPs. For the reasons described above, this strategy, and EPA's implementation of it, are fully supported by the Clean Water Act.

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[15] Strategy for Protecting and Restoring the Chesapeake Bay Watershed, May 12, 2010, p. 24. http://executiveorder.chesapeakebay.net/file.axd?file=2010%2f5%2fChesapeake+EO+Strategy%20.pdf .

Conclusion about Legal Authority to Develop (and Implement) the Bay TMDL

As stated above, in order to meet its legal obligation, EPA must develop a Bay-wide TMDL. In addition, it is logical, appropriate and fair for EPA to take this action. Consistent with the statutory scheme, binding judicial agreements, and at the request of the Bay states, EPA has taken the lead in developing and proposing the TMDL, based on years of discussions and hard work with representatives of the Bay states, the scientific community, members of the public, local officials and other stakeholders. Given the multi-jurisdictional nature of the water quality problems in the Bay, it also makes immense practical sense for EPA to take the lead. EPA's lead role in developing the TMDL and the final deadlines of December 2010 and 2025, for implementation, are further supported by the final strategies developed pursuant to the President's May 12, 2009 Executive Order.

III. Chesapeake Bay Program Computer Models

Computer models play an important role in helping to simulate complex ecosystems. As one of the largest estuaries in the world, with a watershed that extends 64,000 square miles, the Chesapeake Bay is a place where models can help demonstrate where and how water pollution begins and moves. Over the history of the Chesapeake Bay clean-up, managers and scientists have relied on a series of computer models to predict changes in water quality, better understand where pollution is coming from and look at what management practices applied on the land do to impact water quality. These models have been continuously updated and improved. In fact, the first Bay model was a two-dimensional hydraulic model constructed on several acres on Kent Island, Maryland, by the U.S. Army Corps of Engineers in 1976. This model was soon replaced by computer models in the early 1980s.

What is commonly referred to as "the Bay model" is actually a series of linked three-dimensional models. The centerpiece of this set of models is the Chesapeake Bay Watershed Model, which measures all the sources of nutrient and sediment pollution in the watershed, and determines the loadings to the Bay. The suite of Chesapeake Bay models has been developed through an extensive peer reviewed scientific process over the past 20 to 30 years, with broad-based collaboration among federal, state, academic and private partners. Over the years these models have improved significantly in precision, scope, complexity and accuracy. The Watershed Model, for example, has been refined considerably over the past six years. The segments in the model have expanded more than twentyfold from 94 in the Phase 4 model to 2,000 in the current Phase 5 model, providing data at the watershed, county and conservation district level. The model is calibrated with monitoring stations throughout the Bay watershed, but those stations have expanded from 20 to 296. The types of land uses that can be fed into the Phase 5 model is now 25, up from the previous 9, and the simulation is now run over a 20 year period, rather than 10 years, providing more accurate results.

These models are used by scientists and managers, in conjunction with other tools, such as monitoring and research. The models play a significant, but not an exclusive role, in the decision by policymakers to establish nutrient and sediment allocations. In 2003, the model simulations and other data pointed toward a nitrogen allocation of 175 million pounds annually.

Federal and state decision makers ultimately allocated 183 million pounds of nitrogen to the seven Bay watershed jurisdictions, each of which developed Tributary Strategies, which were blueprints on how to meet each state's nutrient and sediment allocation. EPA 2003, Setting and Allocating the Chesapeake Bay Basin Nutrient and Sediment Loads, EPA 903-R-03-007. Additional information, including a newer Phase 5 model led to a very similar allocation in 2010 of 187.44 million pounds of nitrogen to the seven jurisdictions. The allocations in 2010 for the TMDL were very close to those that the states were given six years earlier. The state Tributary Strategies were available to form the base for the Final Phase I WIPs that each Bay state needs to develop by November 29, 2010.

Background on Bay Program Models

The Chesapeake Bay Program uses five primary models. In use since 1982, the Chesapeake Bay Watershed Model simulates nutrient and sediment loads delivered to the Chesapeake Bay. Water quality data are collected from federal and state agencies as well as universities. The current, Phase 5, Watershed Model is open source,[16] in the public domain and has been extensively peer reviewed.[17] The Bay Program has employed an extensive stakeholder participation process in addition to placing the Watershed Model source code and data on the web.[18] The second model, known as the Estuary Model, looks at the effects of pollution loads generated by the Watershed Model on Bay water quality. The Bay is represented by 57,000 cells in this model and simulates the mixing of waters in the Bay and its tidal tributaries. The third, Scenario Builder Model simulates changes in the ecosystem due to changes in population, landuse, or pollution management. This model is also in the public domain with documentation available online.[19] The Airshed Model uses information about nitrogen emissions into the atmosphere and deposits them into the Watershed Model. The Land Change Model analyzes and predicts land changes in the watershed.

The Phase 5 Watershed Model has almost 100 collaborators and partners led by EPA, Virginia Department of Conservation and Recreation, Interstate Commission on the Potomac River Basin, University System of Maryland, Maryland Department of the Environment, U.S. Geological Survey, Chesapeake Research Consortium, and Virginia Polytechnic Institute. Special attention has been paid to the agricultural assumptions in the model with specific input from the Bay Program's Agricultural Nutrient and Sediment Reduction Workgroup.[20] In addition, the Bay Program partnership recently funded University of Maryland's Mid-Atlantic Water Program to complete a 2-year study to update the effectiveness estimates of every best management practice in the model which resulted in a 900 page report that summarizes for each practice, all data evaluated, the technical experts involved in developing the recommendation, and all accounting of discussions and decisions made.

Peer Review and Awards

[16] An approach to the design, development, and distribution of software, offering practical accessibility to a software's source code.
[17] http://www.chesapeakebay.net/committee_msc_projects.aspx?menuitem=16525#peer.
[18] http://ches.communitymodeling.org/models/CBPhase5/index.php#partners.
[19] http://archive.chesapeakebay.net/pubs/SB_Documentation_Final_V22_9_16_2010.pdf.
[20] http://www.chesapeakebay.net/committee_agworkgroup_info.aspx?menuitem=16731.

The models developed by the Bay Program have extensively been peer reviewed and follow guidance developed by EPA's Science Advisory Board.[21] In addition the models have won numerous awards beginning in 1990 (Appendix A). The Bay Program models are regularly cited as the best of their kind. In its April 2007 report, *Taking Environmental Protection to the Next Level*[22], the National Academy of Public Administration stated that:

> EPA's Chesapeake Bay Program has led the way in developing a comprehensive water monitoring and assessment program that tracks and compiles the water quality conditions throughout the Bay. Based on the monitoring data, the CBP has developed sophisticated Chesapeake Bay watershed and airshed models that have enhanced the understanding of the complex problem of nutrient pollution and its effects on the Bay waters. This watershed-wide understanding provided the foundation for the 1987 Chesapeake Bay Agreement and helped to coordinate and assign responsibility among the Bay states for achieving water quality goals.

Science and Model Criticism

Over the last several months we have seen wild accusations about the soundness of the models and the science behind it; however, there is nothing to support these claims. The Bay Program partners have been extremely transparent and open about the modeling process and sought input from hundreds of stakeholders including agricultural specialists. The one criticism raised in the 2006 Government Accountability Office (GAO) report was that the credibility of Bay Program reports on Bay health "tended to downplay the deteriorated conditions of the bay" and "projected a rosier picture of the health of the bay than may have been warranted."[23] While serious, the GAO's criticism points to the fact that the Bay models, if anything, were over-reporting the nutrient and sediment--reducing value of practices on the land. This criticism also focused more on the use, or misuse, of modeled data, rather than the model itself. In 2008, a follow-up GAO report concluded that the Bay program had made important progress in addressing their concerns and providing better management of the Bay restoration effort.

Another public criticism of the model has been that many practices, particularly agricultural ones, implemented voluntarily, are not being accounted for in the model. While this statement is true, in reality, it is not a flaw of the model, but rather a failure to collect the proper input information to feed into the model. The solution to this problem is to provide better accounting, not to change any of the model parameters. In addition, this under-counting of implemented practices does not affect the TMDL load allocations to the states which were based on the relative difference between maximum implementation of practices and no-action.

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[21] http://www.epa.gov/spc/pdfs/modelpr.pdf. Peer review guidance developed by the Ecological Society of America and endorsed by the *American College of Preventive Medicine, American Fisheries Society, American Institute of Biological Sciences, American Public Health Association, American Society of Agronomy, American Society of Limnology and Oceanography, Association of Teachers of Preventive Medicine, Crop Science Society of America, Ecological Society of America, Estuarine Research Federation, Institute of Food Technologists, Soil Science Society of America, Society for Conservation Biology.*

[22] 2007. National Academy of Public Administration. "Taking Environmental Protection to the Next Level: An Assessment of the U.S. Environmental Services Delivery System" 2048

[23] Government Accountability Office Report (GAO-06-614T) "Chesapeake Bay Program: Improved Strategies Needed to Better Guide Restoration Efforts" (July 13, 2006).

Use of the Model and TMDL Calculation Decisions

The calculation/modeling decisions which EPA made in developing the draft TMDL allocations, documented in section 6 of the TMDL report, are sound, reasonable, and well-based on the available information. These decisions also reflect an exemplary degree of consultation with the Bay states through the Water Quality Goal Implementation Team, using input from the Chesapeake Bay Program's expert work groups. We support EPA's decisions on the model parameters, such as hydrologic period and critical conditions (section 6.1), and the procedures for determining attainment with water quality standards, which reflect use of Chesapeake Bay science (section 6.2). We agree with EPA's rationale for using the "implicit" Margin of Safety for the nutrient allocations. We applaud the transparency with which EPA has outlined the allocation "rules" and methodology in section 6.3, and note that the "Principles and Guidelines" are not only sound but reflect the seven years of experience (since the 2003 allocations) which EPA and the Bay state partners have in making allocation decisions together. Including air deposition in the TMDL load allocations, as described, make sense.

Finally, we reviewed carefully the discussion and rationale for basing the TMDL on proposed revisions to the water quality standards which have not yet been finalized in all jurisdictions. If these standards can be duly established by the states and approved by EPA before the TMDL is published in December 2010, we agree that the TMDL should be so based. This is, in fact, continuing evidence of the commitment of EPA and the states to evaluate the attainability of the tidal water standards, while continuing to ensure that they are protective of aquatic life uses.

As essential as TMDLs are to establish responsibility for water quality cleanup actions, they are also a flexible tool. EPA can propose modifications at any time based on changes in water quality standards and improvement of modeling and analytical tools. This is an important feature of TMDLs. We noted that EPA will evaluate modifications of the Chesapeake Bay TMDL as early as 2011 based on improvements in the state WIPs and other factors. There is a general commitment to continuous evaluation and improvement in the Bay Program.

Some might argue that EPA should wait to establish the Bay TMDL until all the WIPs are done, new agricultural information has been completed for the model (such as accounting for voluntary practices), etc. We emphatically disagree that EPA should delay in establishing the TMDL. This essential legal framework must be established now. As comparison of the 2003 allocations and 2010 draft TMDL has shown, the basic information is well known. Changes in the TMDL allocations which may be envisioned will only be marginal. Bay cleanup will only get harder and more expensive with delays.

Conclusions

EPA, in cooperation with its Bay state partners and after years of allocation experience, has established sound, supportable rules and methods for establishing the Bay TMDL. The Chesapeake Bay Program models are a critical tool in the adaptive management framework currently employed by the EPA and the Bay states to identify a path forward for restoration of

the Chesapeake Bay. While water quality data and the actual living resources in the Chesapeake Bay will ultimately determine when we have restored a clean Bay, the Chesapeake Bay Program models help us develop a scientifically valid path to our goals.

IV. The Economic Argument for a Clean Bay

Congress has recognized that the Chesapeake Bay is a "national treasure and resource of worldwide significance."[24] Valued at over 1 trillion dollars, a restored and protected Chesapeake Bay is essential for a healthy and vibrant regional economy. Failure to "save the Bay" threatens this economic driver and, in fact, economic losses have already occurred due to water quality degradation throughout the watershed. More importantly, investing in clean water technology creates jobs, generates economic activity, and can save money in the long run.

The Bay supports Important Commercial and Recreational Fisheries that Have Been Degraded by Poor Water Quality

Perhaps no other creature better exemplifies the Chesapeake Bay than the blue crab, *Callinectes sapidus*. For more than a half century, the blue crab has been at the apex of the Bay's commercial fisheries. Over one-third of the nation's blue crab harvest comes from the Chesapeake Bay. The average annual commercial harvest in Maryland and Virginia between 1999 and 2008 was about 55 million pounds.[25] The dockside value of the blue crab harvest Bay-wide in 2008 was approximately $ 70 million.[26] The recreational fishery also provides a significant financial off-set for Bay residents – the cost of catching crabs is far less than having to buy them.

The overall trend, however, since the 1990's has been a decrease in landings despite increased crabbing effort. [27] In addition, the number of crabs one year and older dropped from 276 million in 1990 to 131 million in 2008.[28] When the broader impact on restaurants, crab processors, wholesalers, grocers, and watermen is added up, the decline of crabs in the Bay meant a cumulative loss to Maryland and Virginia of about $640 million between 1998 and 2006.[29]

As a result of the low population level, in 2008, Maryland and Virginia issued severe crabbing restrictions, in an attempt to restore the population. These restrictions placed severe economic hardship on Chesapeake Bay crabbers. In response, members of Congress from Maryland and Virginia requested federal disaster relief for Bay crab fishermen. In September, 2008, the Secretary of Commerce determined that the Chesapeake Bay soft shell blue crab fishery had undergone a commercial failure as defined under the Magnuson-Stevens Fishery

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[24] Chesapeake Bay Restoration Act of 2000, Nov. 7, 2000, P.L. 106-457, Title II, § 202, 114 Stat. 1967.
[25] NOAA 2008. 2008 Fisheries Economics of the U.S. http://www.st.nmfs.noaa.gov/st5/publication/econ/2008/MA_ALL_Econ.pdf.
[26] NOAA Fisheries: Office of Science & Technology, Annual Commercial Landing Statistics Website, http://www.st.nmfs.noaa.gov/st1/commercial/landings/annual_landings.html
[27] Tom Horton. 2003. Turning the Tide: Saving the Chesapeake Bay. Second Edition. Island Press. Washington, D.C. 2003.
[28] Chesapeake Bay Program. 2010. http://www.chesapeakebay.net/status_bluecrab.aspx?menuitem=19683
[29] Unpublished data. Dr. James Kirkley, Virginia Institute of Marine Science.

Conservation and Management Act (16 USC § 1861). In January 2009, the Department of Commerce allocated $10 million of disaster relief to each state. This was a substantial taxpayer expense that will not be needed in the future if the Bay is restored to its former health.

In 2009, the number of spawning-age crabs rebounded to 223 million.[30] Nonetheless, poor water quality continues to limit crab populations in the Chesapeake Bay. On average, over the last 10 years, more than 75% of the Chesapeake Bay and its tidal rivers have had insufficient levels of dissolved oxygen. [31] Low oxygen levels drive blue crabs from their preferred habitat and kill many of the small bottom organisms on which the blue crabs feed. [32] The low dissolved oxygen conditions caused by excess nutrients are the primary reason large sections of the Bay have become unsuitable as blue crab habitat. In addition, a study by the University of Maryland demonstrated that decreases in dissolved oxygen can reduce crab harvests and revenue to watermen.[33]

Poor water clarity also has impacted crab populations. Poor water clarity has reduced the amount of underwater grasses necessary to protect juvenile crabs, molting crabs, and adults from predation. Studies have shown that crabs living in areas with little or no underwater grasses suffer higher mortality.[34] Water clarity in the Bay has been decreasing since the 1990s and in 2009, only 26% of the Bay had acceptable water clarity. Until water quality improves, the blue crab population will not fully recover.[35]

Another critical Bay species, commercially, recreationally, and as an important part of the Bay ecosystem, is the oyster. From the 1800s to the mid-1900s, the commercial oyster industry employed thousands of people catching, selling, shucking, and shipping oysters to market. Hundreds of skipjacks, sail powered dredges, plied the waters of the Bays in search of the delectable oyster. The industry generated millions of dollars a year to the Bay economy. Until the mid-1980s, the oyster was the leading commercial fishery in the Bay. Like the blue crab, Bay oysters spawned a rich cultural heritage.

In addition to their commercial and recreational value, oysters improve water quality because they are filter feeders. An individual oyster pumps over 50 gallons of water a day through its gills which strains out food, chemicals, nutrients, and sediment. In addition, oyster reefs provide valuable habitat for countless Bay creatures, most notably finfish, and serve as popular fishing areas.

Unfortunately, a combination of overharvesting, disease, and poor water quality has decimated the oyster populations in the Chesapeake Bay to around 1% of historic levels. Silt washed by rain from urban areas and agricultural fields can bury oyster beds, particularly those

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[30] Chesapeake Bay Program. 2010. http://www.chesapeakebay.net/status_bluecrab.aspx?menuitem=19683
[31] http://www.chesapeakebay.net/status_dissolvedoxygen.aspx?menuitem=19647
[32] Diaz, R.J. and R. Rosenberg. 2008. Spreading Dead Zones and Consequences for Marine Ecosystems. *Science*. Vol. 321.
[33] Mistiaen, J.A., I.E. Strand, and D. Lipton. 2003. Effects of environmental stress on blue crab (*Callinectes sapidus*) harvest in Chesapeake Bay tributaries. *Estuaries* Vol. 26:316-322
[34] http://www.chesapeakebay.net/crabs.aspx?menuitem=14700.
[35] http://www.mdsg.umd.edu/issues/chesapeake/blue_crabs/about//.

that have been flattened by dredges.[36] Extended periods of zero oxygen conditions can be fatal to oysters.[37] In addition, recent studies have indicated that low oxygen levels can stress the immune systems of oysters, making them more susceptible to disease.[38] Pollution has also resulted in the closure of shellfish beds to commercial harvesting. Threats from sewage and bacteria forced Maryland and Virginia to close or restrict oyster harvesting in 223,864 acres of the Bay and its tributaries in 2008, about 8 % of the total shellfish beds.[39] The decline of the Bay oyster over the last 30 years has meant a loss of more than $4 billion for Maryland and Virginia.[40]

The rockfish (also known as striped bass) has been and remains the most popular commercial and recreational fish in the Bay, generating roughly $500 million of economic activity related to fishing expenditures, travel, lodging, etc.[41] Faced with a catastrophic collapse in the fishery, commercial and recreational fishing for rockfish were banned in the Maryland portion of the Bay from 1985-89 and in Virginia during 1989.[42] The dramatic decline of the population was due to several factors including overfishing and low dissolved oxygen in deeper parts of the Bay. Today, the rockfish population is at its highest in decades. However, scientists are concerned about the high prevalence of disease which has been attributed to poor water quality and limited availability of its preferred prey.[43]

In its entirety, the fisheries industry is a significant part of local economies. The *2008 Fisheries Economics of the U.S.* report by the National Oceanic and Atmospheric Administration (NOAA) indicates that commercial seafood industry in Maryland and Virginia contributed $2 billion in sales, $1 billion in income, and more than 41,000 jobs to the local economy.[44] In addition there are indirect benefits to the economy in terms of jobs and work created for those who sell fishing tackle, maintain and repair boats and equipment and provide other related goods and services.

The economic benefits of saltwater recreational fishing are equally as impressive, contributing $ 1.6 billion in sales which in turn contributed to more than $ 800 million of additional economic activity and roughly 13,000 jobs.[45] The majority (90 - 98%) of the commercial and recreational saltwater landings in this region come from the Chesapeake Bay.[46]

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[36] U.S. Army Corps of Engineers. 2008. Oyster Environmental Impact Statement. http://www.nao.usace.army.mil/OysterEIS/FINAL_PEIS/homepage.asp.

[37] Chesapeake Bay Foundation. 2010. On the Brink: Chesapeake's Native Oysters. What it will take to bring them back.

[38] .R.S. Anderson. 1988. Effects of tributyltin and hypoxia on the progression of *Perkinsus marinus* infections and host defense mechanisms in the oyster, Crassostrea virginica. *Journal of Fish Disease*. Vol. 21:371-379.

[39] Data from Departments of Health in Virginia and Maryland cited On the Brink: Chesapeake's Native Oysters. What it will take to bring them back.

[40] Chesapeake Bay Foundation. 2010. On the Brink: Chesapeake's Native Oysters. What it will take to bring them back.

[41] Southwick Associates. 2005. The Economics of Recreational and Commercial Striped Bass Fishing. www.southwickassociates.com/freereports/default.aspx.

[42] http://www.chesapeakebay.net/stripedbass.aspx?menuitem=19389.

[43] http://www.chesapeakebay.net/stripedbassharvest.aspx?menuitem=15316.

[44] NOAA 2008. 2008 Fisheries Economics of the U.S (see 24)

[45] NOAA 2008. 2008 Fisheries Economics of the U.S (see 24)

[46] Lellis-Dibble, K.A., K.E. McGlynn, and T.E. Bigford. 2008. Estuarine Fish and Shellfish Species in U.S. Commercial and Recreational Fisheries: Economic value as an incentive to protect and restore estuarine habitat. NOAA Technical Memorandum. http://spo.nwr.noaa.gov/tm/TM90.pdf

The economic losses associated with the decline in fisheries resources in the Bay are substantial. Between 1994 and 2004 the value of Virginia's seafood harvest decreased by 30% [47] with Maryland's commercial landings exhibiting a similar decline during that time.[48] Further, between 1993 and 2009 the number of Bay watermen declined from around 14,000 to 1,500.[49] [50]

A 2001 study compared the 1996 water quality of the Bay with what it would have been without the Clean Water Act. Results indicated that benefits of water quality improvements to annual recreational boating, fishing, and swimming ranged from $357.9 million to $1.8 billion.[51] Fisheries declines since the 1990s indicates that early progress reducing pollution hasn't been sustained – we must reverse this trend.

These economic impacts are not restricted to the tidal regions of the Bay watershed. According to the Pennsylvania Fish and Boat Commission (PFBC), nearly 2 million people go fishing in Pennsylvania each year, contributing over $ 1.6 billion to the economy. Among the most popular species for anglers are smallmouth bass and coldwater species, such as brook trout. The PFBC recently passed a proposal to be enacted January 1 that mandates total catch-and-release of smallmouth bass in certain areas of the Susquehanna River because of population declines associated with water quality problems. Degraded stream habitat has restricted brook trout to a mere fraction of its historical distribution.

Virginia, and to a lesser extent Maryland, also support significant freshwater recreational fisheries, with roughly 1 million anglers participating and contributing millions to local economies.[52] By way of example, a fish kill in the Shenandoah River watershed in 2005, likely caused by a variety of factors including poor water quality, resulted in roughly a $700,000 loss in retail sales and revenues.[53]

If pollution to the Bay is left unabated, we will see more continued decline of the region's fisheries and the resulting economic impacts. In short, we cannot afford *not* to clean up the Bay. The comparatively modest up-front investments in doing so will pay enormous long term dividends to the entire watershed and its 17 million residents.

Unhealthy Waters Hurt Public Health and Local Economies

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[47] Kirkley, et al. 2005. Economic Contributions of Virginia's Commercial Seafood and Recreational Fishing Industries: A User's Manual for Assessing Economic Impacts. Virginia Institute of Marine Science Report No. 2005-9.
[48] NOAA 2008. 2008 Fisheries Economics of the U.S (see 24)
[49] Environment Virginia, Research and Policy Center. 2009. Watermen Blues: Economic, Cultural, and Community Impacts of Poor Water Quality in the Chesapeake Bay.
[50] Tom Horton. 2003 (see 26)
[51] Morgan, et al. 2001. Benefits of water quality policies: the Chesapeake Bay. *Ecological Economics*. Vol. 39: 271-284.
[52] U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.
[53] Papadakis, M. 2006. The Economic Impact of the 2005 Shenandoah Fish Kill: A preliminary economic assessment. James Madison University. www.dep.state.va.us/export/sites/default/info/documents/fishkillReport-final.pdf.

Unhealthy waters increase public health burdens associated with consuming tainted fish or shellfish or exposure to waterborne infectious disease while recreating. For example, one study estimated the cost associated with exposure to polluted recreational marine waters to be $37 per gastrointestinal illness, $38 per ear ailment, and $27 per eye ailment due to lost wages and medical care.[54] Furthermore, although closing a beach is meant to prevent illness, it directly and indirectly results in an economic loss for local businesses and the county where the beach is located. For example, a study by NOAA indicated that a one day beach closure in Huntington Beach, California was expected to result in thousands of dollars of lost income for local communities.[55] There are hundreds of beach closures in the bay region each year,[56] potentially resulting in hundreds of thousands of dollars of lost income for local economies.

Nature Based Recreation: Vital Economic Drivers for the Bay Region

Roughly 8 million wildlife watchers spent $ 636 million, $960 million and $1.4 billion in Maryland, Virginia and Pennsylvania, respectively in 2006 on trip-related expenses and equipment.[57] These estimates do not include other economic benefits of these expenditures such as job creation and the multiplier effect on local economies. Improvements to water quality, as well as the implementation of actions, such as afforestation, land preservation, and wetlands restoration, that will lead to improved water quality, will increase and enhance wildlife populations. A study in the Great Lakes indicates there would be substantial improvement in wildlife watching opportunities and associated economic benefits by improvements to wildlife habitat.[58]

Recreational boating is also a strong economic driver in Maryland, Pennsylvania and Virginia. The total impact on the Maryland economy from recreational boating is estimated to be about $2.03 billion and 35,025 jobs.[59] Similarly, Pennsylvania residents spend $1.7 billion on boating annually. The average expenditure per recreational boater is $274. Of this amount, roughly $113 a year is spent in direct boating-related expenses and $161 is spent on trip-related expenses, including: auto fuel, meals, lodging and admission/entrance fees.[60]

A recent study in Hampton, Virginia found that resident and non-resident boaters were responsible for $55.0 million in economic impact to this city. This impact represents $32.5 million in new value added, $22.2 million in incomes and 698 jobs.[61] The majority of expenditures were by out-of-region boating-visitors which represents an inflow of "new" capital

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[54] R. H. Dwight, et al. 2005. Estimating the economic burden from illnesses associated with recreational coastal water pollution - a case study in Orange County, California. *Journal of Environmental Management.* Vol:95-103.
[55] http://stateofthecoast.noaa.gov/coastal_economy/beacheconomics.html.
[56] NRDC. 2010. Testing the Waters: A guide to water quality at vacation beaches. http://www.nrdc.org/water/oceans/ttw/ttw2010.pdf.
[57] U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.
[58] Austin, J.C. et al. 2007. America's North Coast: A Benefit-Cost Analysis of a Program to Protect and Restore the Great Lakes. Brookings Institute, Great Lakes Economic Initiative.
[59] Lipton, D. 2007. *Economic Impact of Maryland Boating in 2007.* University of Maryland Sea Grant Program.
[60] http://www.fish.state.pa.us/promo/funding/fact_economic_impact.htm.
[61] Virginia Institute of Marine Science. 2009. Assessment of the Economic Impacts of Recreational Boating in the City of Hampton. http://web.vims.edu/adv/econ/MRR2009_2.pdf.

into the community. The study also indicated that "water quality, fishing quality and other environmental factors" ranked among the most important, in terms of factors that influence a boater's decision on where to keep his/her boat.

Investment in Clean Water Technologies Stimulates Local Economies.

A study by the University of Virginia found that implementation of the agricultural practices such as livestock stream exclusion, buffers, and cover crops, would generate significant economic impacts.[62] Every $1 of state and/or federal funding invested in agricultural best management practices would generate $1.56 in economic activity in Virginia. Implementing agricultural practices, in Virginia, to the levels necessary to restore the Bay would create nearly 12,000 jobs of approximately one year duration.

A recent analysis of the value of investing in water and sewer infrastructure concluded that these investments typically yield greater returns than most other types of public infrastructure.[63] For example, one dollar of water and sewer infrastructure investment increases private output (Gross Domestic Product) in the long-term by $6.35. Furthermore, adding 1 job in water and sewer creates 3.68 jobs to support that job.

More specifically, upgrading sewage treatment plants across the watershed has created hundreds of construction jobs, and will create perhaps thousands more as the program begins to grow. Also, upgrading individual septic systems has employed installers, electricians and others involved in the business. These upgrades have pumped millions of dollars into the local economy. A real life example is Mayer Brothers, Inc. in Elkridge, MD.[64] This company staved off significant layoffs this year when the small manufacturing company won a contract from the Maryland Department of Environment to help supply new septic technology throughout Maryland.

On the flip side, cuts to funding programs for clean water infrastructure will lead to job losses. Carter B. McCamy says he will probably have to lay off over 20 workers from his Arbutus, Maryland company if the Maryland legislature cuts the Chesapeake and Atlantic Coastal Bays 2010 Trust Fund.[65] McCamy is CEO of Environmental Quality Resources, LLC, an environmental construction company that specializes in stream restoration, wetland mitigation, reforestation, shoreline stabilization and storm water management. The firm has received significant contracted work through the Trust Fund. He employs 115 full-time workers, and also supports an additional 100 subcontractors who provide trucking materials, concrete, paving and fencing required for stormwater mitigation projects.

Clean Waterways Increase Property Values

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[62] Rephann, T.J. 2010. Economic Impacts of Implementing Agricultural Best Management Practices to Achieve Goals Outlined in Virginia's Tributary Strategy. Weldon Cooper Cneter for Public Service, University of Virginia. www.coopercenter.org/sites/default/files/publications/BMP_paper_final.pdf.

[63] Krop, R.A., C. Hernick, and C. Frantz. 2008. Local Government Investment in Water and Sewer Infrastructure: Adding Value to the National Economy. The U.S. Conference of Mayors, Mayors Water Council.

[64] http://www.supportgoodmdjobs.com//.

[65] Lipton, D. 2007 (see 58)

An EPA study indicated that clean water can increase the value of single family homes up to 4,000 feet from the water's edge by up to 25%.[66] A 2000 study concluded that improvements in water quality along Maryland's western shore to levels that meet state bacteria standards could raise property values 6%.[67] High water clarity was shown to increase average housing value by 4 to 5% or thousands of dollars.[68] [69] Homes situated near seven California stream restoration projects had 3 to 13% higher property values than similar homes located on damaged streams.[70] A study by the Brookings Institute projected a 10% increase in property values for homes that would about a proposed $26 billion Great Lakes restoration project.[71] The City of Philadelphia estimates that installation of green stormwater infrastructure in the city will raise property values 2 to 5 percent generating $390 million over the next 40 years in increased values for homes near green spaces.[72]

Pollution Reductions Lower Drinking Water and Utility Costs

Reducing pollution inputs from pipes and land-based sources can reduce locality costs to treat drinking water sources to safe standards. New York City's expenditure of $1 billion over the last decade to protect the watersheds north of the city that supply its drinking water avoided the need to build a $6 billion treatment plant.[73] An EPA study of drinking water source protection efforts concluded that for every $1 spent on source water protection, an average of $27 is saved in water treatment costs.[74] Similarly, a study by the Brookings Institute suggested that a 1% decrease in sediment loading will lead to a 0.05% reduction in water treatment costs.[75]

Proactive efforts to lessen stormwater flows today reduce future public costs needed to maintain navigation channels, remediate pollution and hazard flooding, and repair infrastructure and property damage caused by excessive runoff. Philadelphia estimates that after 40 years their installation of green infrastructure will create more than $2 in benefits for every dollar invested,

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[66] EPA. 1973. Benefit of Water Pollution Control on Property Values. EPA-600/5-73-005. http://yosemite.epa.gov/ee/epa/eermfile.nsf/vwAN/EE-0009.pdf/$file/EE-0009.pdf.

[67] C. G. Leggett, et al. 2000. Evidence of the effects of water quality on residential land prices. *J. Environ. Econ. Manag.* Vol. 39:121–144.

[68] Jentes Banicki, J. 2006. Hot Commodity: Cleaner Water Increases Lake Erie Property Values. *Twineline*. Vol 28, No. 3-4. Ohio Sea Grant, Ohio State University. http://ohioseagrant.osu.edu/documents/twineline/v28i4.pdf.

[69] Poor, J.P. et al. 2007. Exploring the hedonic value of ambient water quality: A local watershed-based study. *Ecological Economics*, Vol. 60: 797–806.

[70] Streiner, C. et al. 1996. *Estimating the Benefits of Urban Stream Restoration Using the Hedonic Price Method--a thesis in partial fulfillment of the requirements for the Degree of Master of Science*. Dept. of Agriculture and Resource Economics. CSU.

[71] http://stateofthecoast.noaa.gov/coastal_economy/beacheconomics.html.

[72] Philadelphia Water Department. 2009. Green City, Clean Waters: The City of Philadelphia's Program for Combined Sewer Overflow Control—A Long Term Control Plan Update. Summary Report. www.phillywatersheds.org/ltcpu/LTCPU_Summary_LoRes.pdf.

[73] DePalma, A. 2006. New York's Water Supply May Need Filtering. *New York Times*. June 20, 2006. www.nytimes.com/2006/07/20/nyregion/20water.html?_r=1&hp&ex=1153454400&en=2be183debc88eae7&ei=5094&partner=homepage&oref=slogin.

[74] U.S. EPA. *Economics and Source Water Protection*. Presentation by Eric Winiecki,.

[75] http://stateofthecoast.noaa.gov/coastal_economy/beacheconomics.html.

generating $500 million in economic benefits, $1.3 billion in social benefits, and $400 million in environmental benefits.[76]

Conclusion

Efforts to delay implementation of the Bay TMDL will only exacerbate the economic impacts this region has already experienced due to poor water quality. Furthermore, a recent poll in Virginia found that an overwhelming majority believe the state can protect water quality and still have a strong economy.[77] Eighty percent of respondents agreed with the statement, "we can protect the water quality in rivers, creeks and the Chesapeake Bay and have a strong economy with good jobs for Virginians, without having to choose one over the other." Of those polled, 92% believe the Bay is "important for Virginia's economy." Implementation of the TMDL will result in clean water, a healthy Bay and a strong regional economy.

V. Conclusions

The voluntary, cooperative efforts to restore the Bay, which began in earnest in 1983, did not succeed in meeting any significant water quality improvement goals, with only 24% of the Bay's water quality goals met in 2009. The latest estimate for meeting the nutrient reductions necessary to restore the Bay, at the current pace of the voluntary programs, is in 2050. That would be 67 years from when the Bay Program was first formed.

The *1987 Chesapeake Bay Agreement* was very specific, laying out the purpose of this first historic water quality goal for the Chesapeake, "To ensure the productivity of the living resources of the Bay, we must clearly establish the water quality conditions they require and must then attain and maintain those conditions. Foremost, we must improve or maintain dissolved oxygen concentration in the Bay and its tributaries through a continued and expanded commitment to the reduction of nutrients from both point and nonpoint sources." For the first time in 23 years this water quality goal has a chance of being met because the Chesapeake Bay TMDL will address everything that was laid out in 1987; the establishment of new dissolved oxygen water quality standards for the Bay and its tidal tributaries, and nutrient and sediment reduction allocations to the states, which will have to address both point and nonpoint sources of pollution. The court sanctioned Virginia consent agreement in 1999 established the requirement and deadlines for the Chesapeake Bay TMDL and was the trigger for the water quality section in the *Chesapeake 2000* agreement. This fact should rule out any reasonable argument that there has not been enough notice that there would be a Chesapeake Bay TMDL. Eleven years of consideration is sufficient. Moreover, EPA has no choice but to develop a TMDL because the states have failed to do so. This action by EPA is required by the CWA and an abundance of other legally binding agreements.

Given the very nature of the Chesapeake Bay Watershed, the Bay TMDL must be significantly more complex than virtually all of the over-40,000 TMDLs developed across the

[76] Poor, J.P. et al. 2007. Exploring the hedonic value of ambient water quality: A local watershed-based study. *Ecological Economics*, Vol. 60: 797–806.
[77] http://www.cbf.org/Document.Doc?id=562

country to date. Given the size and complexity of the system and the failure of "voluntary" efforts to restore the Bay, the kind of TMDL proposed by EPA is consistent with the legislative recognition by the Bay states and absolutely essential. The regional commitment to restoring the Bay, and the efforts undertaken pursuant to the Executive Order, give us some hope that this suite of TMDLs will be more successful in restoring water quality than previous efforts. There were a variety of reasons for prior failures, including inadequate data, failure to update plans when progress lagged, and most especially, the failure to connect to a real and enforceable, approved implementation plan. We expect that a well implemented TMDL will provide what we have been lacking: strong science and implementation plans built on principles of adaptive management that can and will be enforced. If you have any questions, please contact Coalition Director Hilary Harp Falk (falkh@nwf.org) at 443-759-3406.

Respectfully submitted,

Accokeek Foundation
Adkins Arboretum
American Canoe
American Rivers
Anacostia Riverkeeper
Anacostia Watershed Society
Audubon Maryland/DC
Audubon Naturalist Society
Audubon Society of Northern Virginia
Baltimore Water Alliance
Chapman Forest Foundation
Chesapeake Bay Foundation
Chester River Association
Choptank River Eastern Bay Conservancy
Citizens for a Fort Monroe National Park
Citizens for Pennsylvania's Future (PennFuture)
Clean Water Action
Conservation Voters of Pennsylvania
Corsica River Conservancy
Defenders of Wildlife
Delaware Nature Society
Eastern Pennsylvania Coalition for Acid Mine Reclamation
Environment America
Environment Maryland
Environment Virginia
Float Fishermen of Virginia
Friends of Dyke Marsh
Friends of the Rappahannock
Friends of the Rivers of Virginia
James River Association
Lynnhaven River NOW

Maryland League of Conservation Voters
Maryland Stormwater Consortium
Mattawoman Watershed Society
National Aquarium
National Parks Conservation Association
National Wildlife Federation
Nature Abounds
Partnership for Smarter Growth, Richmond
Peachbottom Concerned Citizens Group
PennEnvironment
Pennsylvania Council of Churches
Potomac Conservancy
Potomac Riverkeeper
Prince William Conservation Alliance
Savage River Watershed Association
Shenandoah Riverkeeper
Shenandoah Valley Network
Southern Environmental Law Center
Virginia Conservation Network
Virginia League of Conservation Voters
West Virginia Rivers Coalition
Wetlands Watch
Wicomico Environmental Trust